



Ahead of the Curve
in creative parking solutions

PARKING DEMAND ANALYSIS

NORTH BEACH
MIAMI BEACH, FLORIDA

Prepared for:
CITY OF MIAMI BEACH

OCTOBER 14, 2014

COMBINED REPORT



WALKER
PARKING CONSULTANTS

PROJECT NO. 15-1988.00

PARKING DEMAND ANALYSIS

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EXECUTIVE SUMMARY

The City of Miami Beach engaged Walker Parking Consultants to analyze the current and future parking conditions within key portions of the City. The focus of this report is North Beach; sub-divided into the Town Center area and the North Shore area. Also included in this analysis are Biscayne Beach, Normandy Shores, and Normandy Isle.

The following provides an executive summary of the findings. The full report provides a detailed analysis.

CURRENT CONDITIONS

A total of 20,859± spaces were inventoried within the overall study area. This does not include unmarked on-street parking within single family residential areas or private residential parking garages. Private off-street parking accounts for 65± percent of the overall parking supply; on-street parking accounts for 27± percent; City owned and operated surface lots account for 6± percent and the remaining 2± percent is public parking provided by the public sector. There are no parking garages owned or operated by the City within the study area. Inventory of restricted parking areas that could not be directly observed are based on the size of the development and required parking ratio or actual numbers provided by the City Planning Department.

Summary of Parking Inventory

	On-Street	City Lot	Off-Street			Total:
			Public Garage	Public Lot	Private	
Town Center	758	676	428	11	7,944	9,817
<i>Sub-Total:</i>	758	676	428	11	7,944	9,817
North Shore	2,210	518	-	-	3,196	5,924
Biscayne Beach	779	-	-	-	314	1,093
Normandy Shores	167	-	-	-	234	401
Normandy Isle	1,764	73	-	-	1,787	3,624
<i>Sub-Total:</i>	4,920	591	0	0	5,531	11,042
Grand-Total:	5,678	1,267	428	11	13,475	20,859
<i>Percentages</i>	27.2%	6.1%	2.1%	0.1%	64.6%	

Source: Walker Parking Consultants

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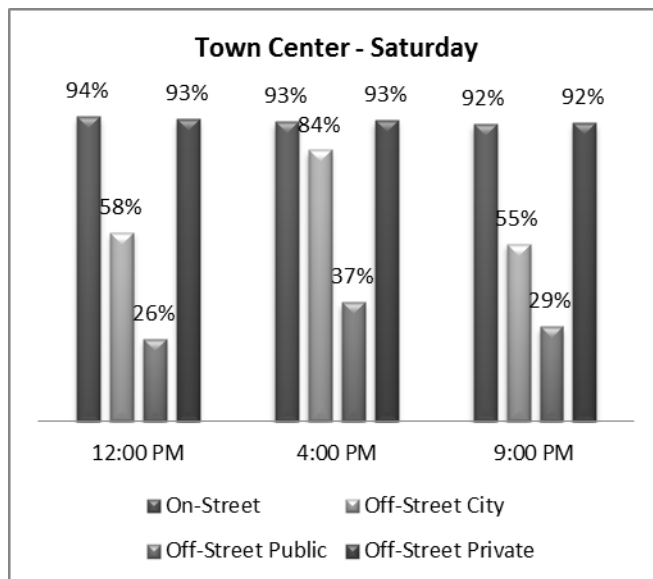
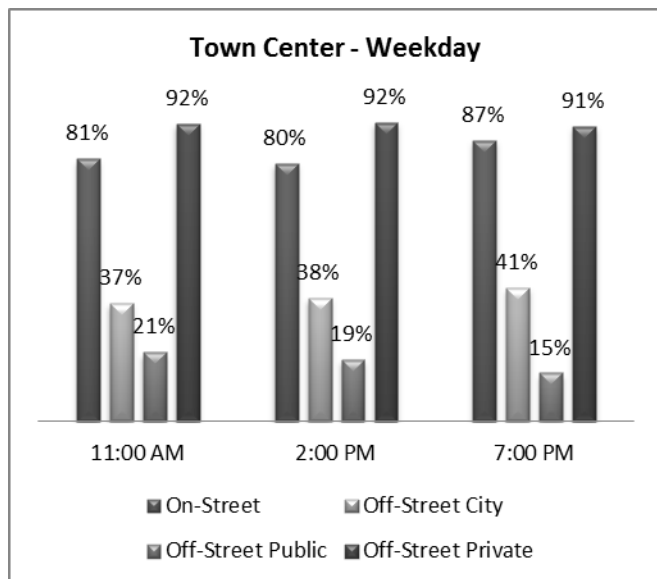
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Parking demand generally peaked during the evening Saturday count periods, with the exception of the North Shore and Town Center areas, which experienced slightly higher occupancy during the 4:00 p.m. count, and Normandy Isle, which peaked during the weekday evening count. Private parking that was not directly observable is counted as being full, which influences the overall occupancy to some degree.

To better understand the occupancy, it is important to review each specific type of parking. On-street parking was consistently occupied at higher levels than other types of parking and City Lots increased during non-enforcement periods. The following graphs illustrate the parking occupancy for each time period and area. Not included are single family resident parking areas, which do not have a defined number of spaces, thus occupancy cannot be calculated based on a percentage of use.



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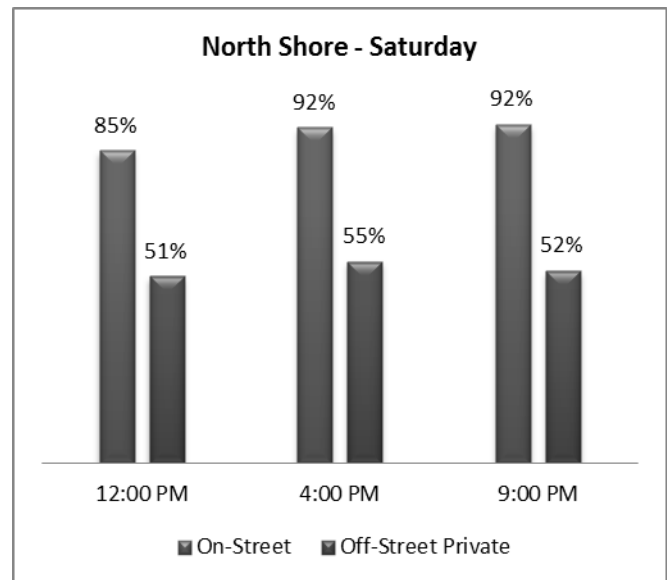
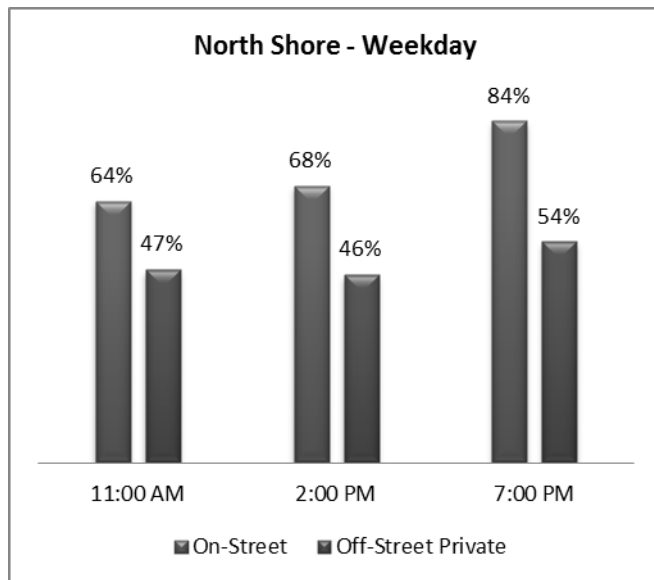
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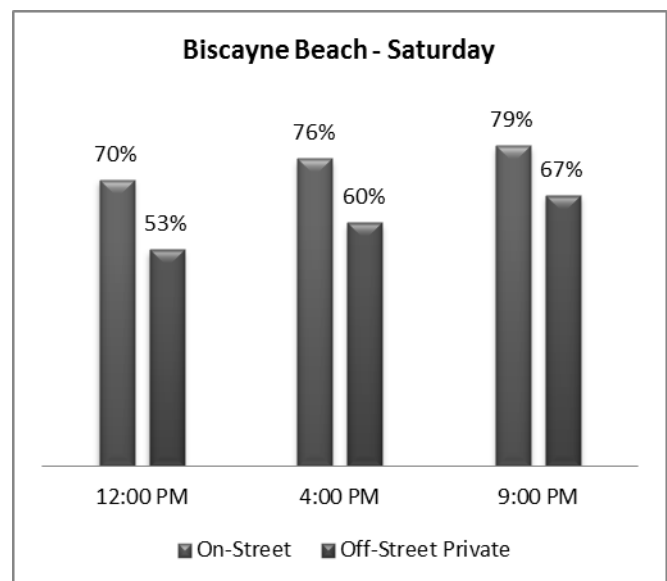
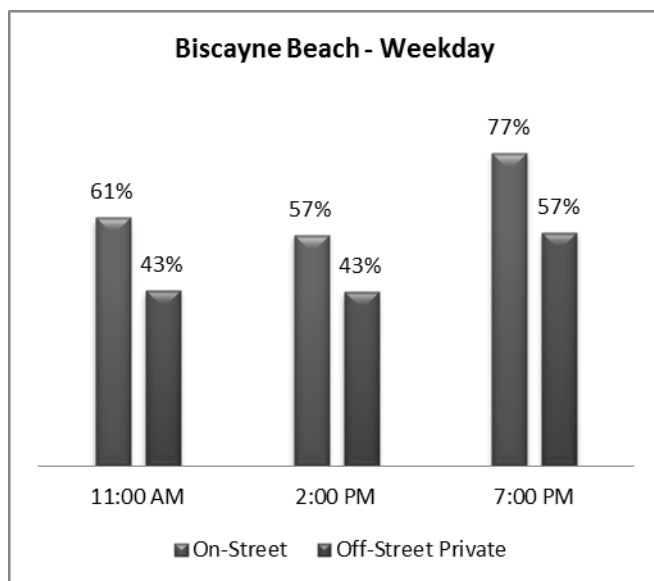
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The Biscayne Beach data only includes the portion containing a mix of multi-family residential units. Areas with single family homes were excluded from this table. No City owned lots are located in this area.



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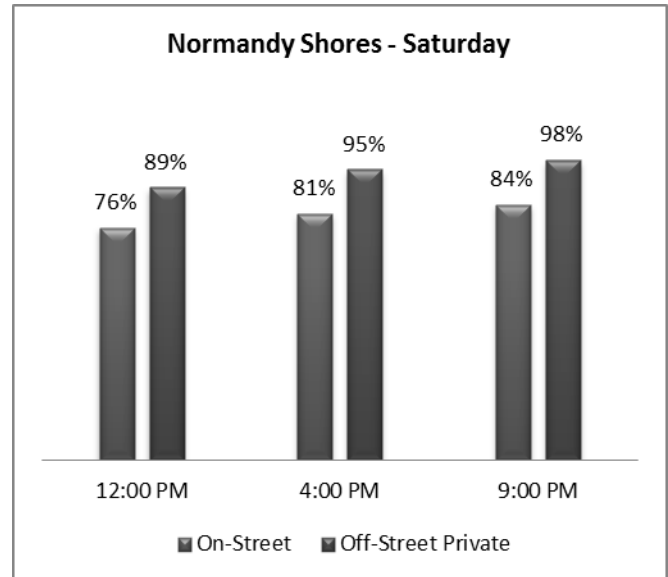
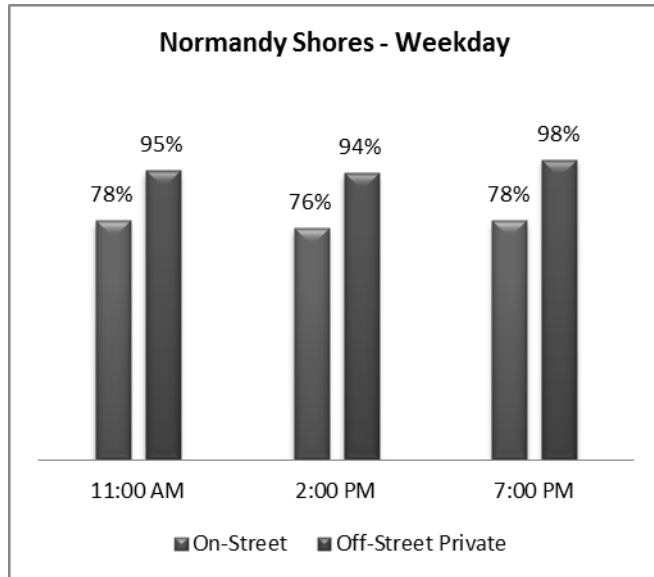
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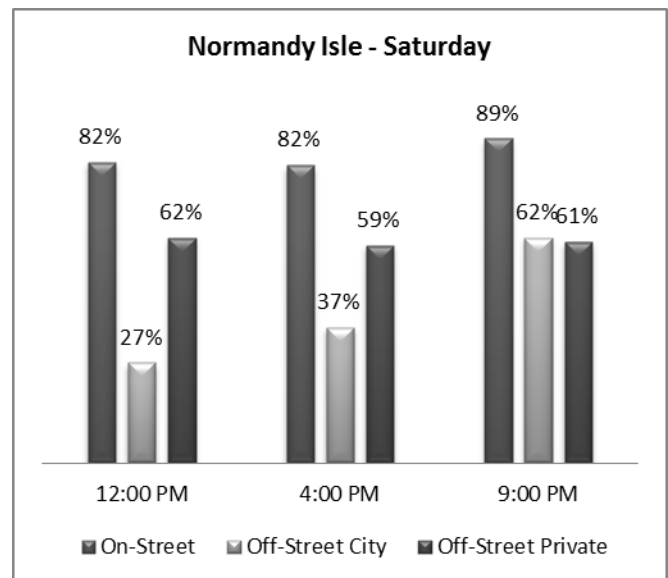
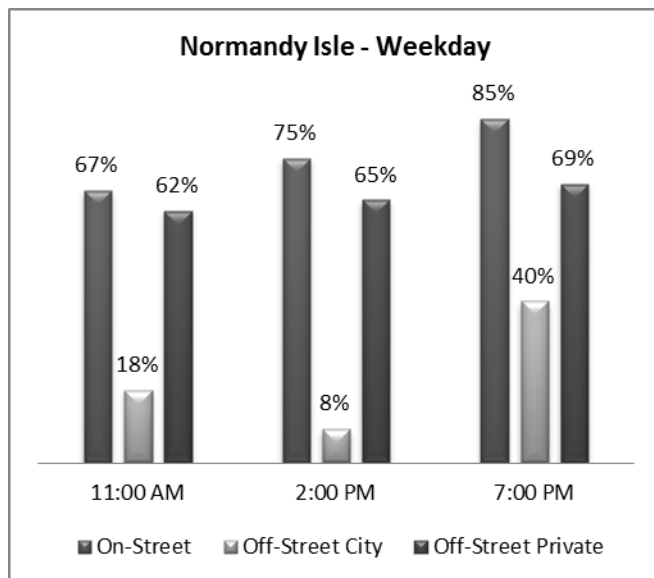
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The Normandy Shores area is limited to two blocks which contain multi-family residents. No City owned parking lots are located within this area.



The Normandy Isle data does not include some areas with only single family homes. Count data for these areas is provided in the full report, but not reflected in these graphs.



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HEAT MAP

The following maps show parking demand for the entire area during the Saturday count when the overall peak was observed, starting with the Town Center area followed by the remaining areas.

Parking Demand Heat Maps - Overall Peak Observation Period

Legend - Occupancy Saturday 4pm

- Study Area / Zone Boundaries
- Block Numbers
- Occupancy $\geq 85\%$ Private
- Occupancy $> 85\%$
- Occupancy 70% - 84%
- Occupancy $< 69\%$



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Occupancy - Saturday 9 pm

- Study Areas
- 000 Block Numbers
- Occupancy $\geq 85\%$
- Occupancy $\geq 70\% - 84\%$
- Occupancy $\leq 69\%$
- Single Family Homes



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FUTURE CONDITIONS

Future parking conditions are based on adding demand and supply changes from the redevelopment projects provided by the Miami Beach Planning Department, either currently under construction or planned. Changes to the parking supply are based on specific information provided in the plan or assuming either 1.5 spaces per residential unit or no new parking if the redevelopment project meets exception standards for adding units to multifamily structures in the National Register Historic Districts.

In addition, three potential growth scenarios are provided based on the *Economic Conditions* report data specific to North Beach and the overall area, compiled and provided by the Tourism, Cultural & Economic Development Department. The three annual growth scenarios used to project the overall change in the parking demand are shown in the table below.

Annual Growth Scenarios

Scenario	Annual Growth Rate	Consideration
1	2.5%	(Smallest Average Annual Growth)
2	3.9%	(Median Average Growth)
3	6.8%	(80th Percentile of Average Annual Growth)

Source: Select data from the Current Economic Conditions Report and Walker Parking Consultants

The projected parking adequacy is shown using the known developments and growth scenario assumptions applied to the observed parking demand for the Town Center area below.

Projected Future Parking Adequacy – Town Center

Year	EPS	Scenario 1		Scenario 2		Scenario 3	
		Demand	Adequacy	Demand	Adequacy	Demand	Adequacy
2015	9,196	8,999	197	9,028	168	9,086	110
2016	9,196	9,054	142	9,115	81	9,241	(45)
2017	9,196	9,110	86	9,205	(9)	9,407	(211)
2018	9,196	9,168	28	9,299	(103)	9,584	(388)
2019	9,196	9,227	(31)	9,396	(200)	9,773	(577)
2020	9,196	9,288	(92)	9,497	(301)	9,975	(779)
2021	9,196	9,350	(154)	9,602	(406)	10,190	(994)
2022	9,196	9,414	(218)	9,711	(515)	10,420	(1,224)
2023	9,196	9,479	(283)	9,824	(628)	10,666	(1,470)
2024	9,196	9,546	(350)	9,942	(746)	10,928	(1,732)

Source: Walker Parking Consultants

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The same methodology is used to project parking adequacy of the remaining areas within the North Beach study area.

Projected Future Parking Adequacy – Remaining Areas

Year	EPS	Scenario 1		Scenario 2		Scenario 3	
		Demand	Adequacy	Demand	Adequacy	Demand	Adequacy
2015	9,984	7,971	2,013	8,073	1,911	8,275	1,709
2016	9,984	8,150	1,834	8,361	1,623	8,787	1,197
2017	10,193	8,508	1,685	8,834	1,359	9,507	686
2018	10,193	8,701	1,492	9,152	1,041	10,102	91
2019	10,193	8,898	1,295	9,482	711	10,737	(544)
2020	10,193	9,100	1,093	9,825	368	11,415	(1,222)
2021	10,193	9,307	886	10,181	12	12,139	(1,946)
2022	10,193	9,519	674	10,551	(358)	12,912	(2,719)
2023	10,193	9,737	456	10,936	(743)	13,738	(3,545)
2024	10,193	9,960	233	11,336	(1,143)	14,620	(4,427)

Source: Walker Parking Consultants

FUTURE PARKING NEEDS SUMMARY

Considering the overall parking adequacy within the study area, when considering parking adequacy as a whole, it may appear to be adequate for the immediate future. While this could be stated as the condition within the larger area, it is somewhat misleading, as half the parking is considered private or restricted for specific users. The primary land use within the study area is residential, which has limited ability to expand based on the current occupancy levels. More likely, increased parking demand will come from redevelopment projects.

Several blocks throughout the study area currently experience high demand and are considered to have inadequate parking based on observations. Future growth in parking demand is very likely based on the historical census data and more areas will likely experience deficits in parking adequacy further adding to those areas already experiencing deficits in parking.

Partnering with a private developer to include building additional public parking spaces within future developments in critical areas is one option to increase public parking without the necessity of building a standalone parking facility or smaller surface lots. This option may also include allowing the improvement of a public parking asset by a private developer with conditions that any existing parking be replaced and expanded upon. These options should only be pursued where parking is in demand and shown to be needed.

Other options to explore include possible expansion of existing facilities, acquiring privately owned facilities in need of repair, and implementing parking management strategies to distribute parking demand or reduce parking demand.



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PARKING MANAGEMENT STRATEGIES

Several parking management strategies are provided in the report, including:

- Implementing a residential parking permit program to ensure local residents are given priority parking where issues exist;
- Exempting residents from certain time limit restrictions where residential parking permit zones are implemented;
- Providing enhanced wayfinding and signage to direct patrons to available public parking, including displaying the number of available spaces on the signage;
- Increased branding and promotion of public parking;
- Implementing dynamic pricing based on seasonality and occupancy surveys;
- Encouraging car sharing services geared toward residents; and
- Allowing limited car reservations to improve options and increase revenue.

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INTRODUCTION

The City of Miami Beach ("the City") engaged Walker Parking Consultants ("Walker") to conduct a parking supply and demand analysis for various areas of the City. The focus of this report is the North Beach area, including Biscayne Beach and Normandy Isles. The purpose of the study is to quantify current and future parking conditions based on various development scenarios to assist in the overall parking management plan of the City. Walker had previously completed a large scale supply/demand analysis in selected areas of Miami Beach in 2004. While the study areas are not an exact match, several of the areas overlap and assist in quantifying the parking supply, demand, and unique challenges in managing public parking for the City.

KEY OBJECTIVES

- Update the physical inventory of parking spaces within the study area.
- Project future demand based on planned projects within the study area and potential future growth.

STUDY AREA

The complete North Beach study area generally encompasses the area from 63rd Street to the south to 87th Terrace to the north including Biscayne Beach, Normandy Isle, and Normandy Shores. For purposes of evaluating the northern area, observations were extended roughly one block to the north to 87th Street, as 87th Terrace does not run continuous through the study area.

The entire study area is broken down by uniquely numbered blocks within each sub-area or sections of roadway for single family residential areas. The southern portion of the overall North Beach study area is Town Center; the northern portions of the study area include North Shore, Biscayne Beach, Normandy Isle, and Normandy Shores. The study areas are outlined in the following maps.

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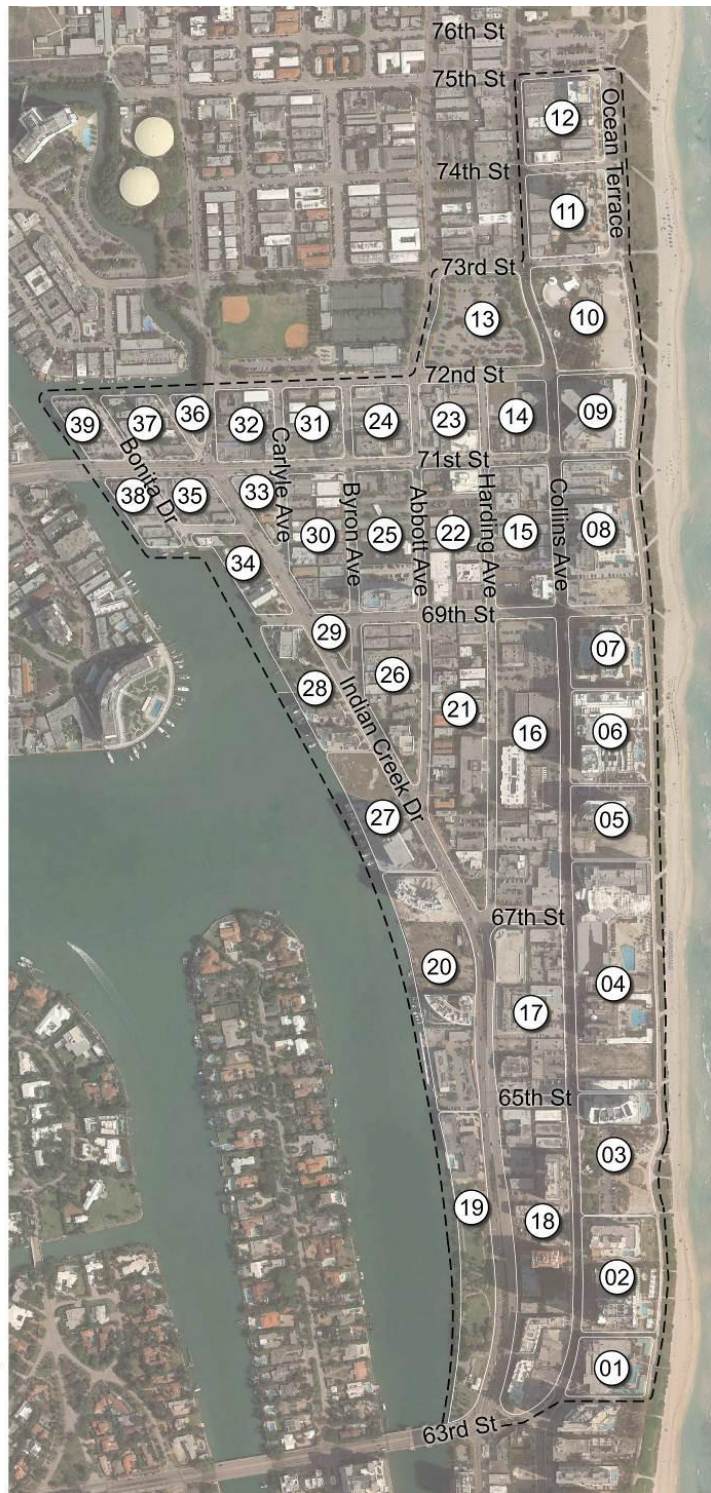
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Figure 1: Study Area Map – Town Center

Base Study Area Map

— Study Area

○ Block Numbers



Source: Google Earth Pro and Walker Parking Consultants

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Figure 2: Study Area Map – Northern Area



Base Study Area Map

- Study Areas
- Block Numbers



Source: Google Earth Pro and Walker Parking Consultants

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DEFINITION OF TERMS

Several terms used in this summary have unique meanings when used in the parking industry. To help clarify these terms and enhance understanding by the reader, definitions for some of these terms are presented below.

- **Demand** – The number of parking spaces recommended to satisfy the visitor, employee and resident demand on a given day.
- **Demand Generator** – Any building, structure, business, or attraction that brings individuals into the study area, thereby increasing parking demand and occupancy.
- **Effective Parking Supply (EPS)** – The actual inventory adjusted to provide the optimum number of parking spaces before parking is typically perceived as being insufficient. This “cushion” in the parking inventory accounts for some spaces lost due vehicles parked in two spaces, spaces lost for repair or temporary blockage and for the time needed for patrons to locate the last few available spaces. The cushion also accounts for the dynamics of vehicles moving in and out of spaces which can lead to “cruising” for the last few open spaces.
- **Effective Supply Factor (ESF)** – The adjustment factor used to calculate the Effective Parking Supply.
- **Inventory** – The total number of parking spaces identified and counted during survey day observations. The intent of this study is to account for all parking within defined geographical areas of study.
- **Occupancy (Counts)** – The number of vehicles observed parked on each survey day.
- **Parking Adequacy** – The difference between the effective parking supply and demand.
- **Private Parking** – A parking space that is restricted from public access and reserved for private use, regardless of ownership.
- **Public Parking** – A parking space that is available for use by the general public on an hourly, daily and/or monthly basis.
- **Survey Days** – The days that the parking occupancy counts were conducted in the study areas.
- **Survey Times** – The time of the survey on the Survey Day. The time generally represents the start time of the data collection

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SUMMARY OF INVENTORY

Parking within the defined area was inventoried and classified as either on-street, off-street public, or off-street private. The off-street public parking facilities were further classified as a City owned and operated parking lot¹; public garage; or public lot. Private parking is any parking restricted for a particular user, such as employee, resident or specific business. Only patrons of that particular venue are permitted to park in that parking facility during their visit to the business. The primary source of private parking are surface lots with several located on the ground floor of residential apartments or condominiums. In addition to marked parking areas, the study area included several single family residential areas without curbs or marked street parking. Parking counts were conducted in these areas but not inventory, as parking typically occurs within the grass areas and not in actual spaces.

PARKING INVENTORY

A total of 20,859± spaces were inventoried within the overall study area. This does not include unmarked on-street parking within single family residential areas which were counted only for the number of vehicles parking. Private off-street parking accounts for 65 percent of the overall parking supply; on-street parking accounts for 27 percent; City owned and operated surface lots account for 6 percent; and the remaining 2 percent is public paid parking. There are no City owned parking garages open to general public within the study area. Inventory of restricted parking areas that could not be directly observed are based on the size of the development and required parking ratio or actual numbers provided by the City Planning department. Table 1 depicts a summary of the total parking inventory by area.

Table 1: Summary of Parking Inventory (sub-totaled by area/map)

	On-Street	Off-Street				Total:
		City Lot	Public Garage	Public Lot	Private	
Town Center	758	676	428	11	7,944	9,817
<i>Sub-Total:</i>	758	676	428	11	7,944	9,817
North Shore	2,210	518	-	-	3,196	5,924
Biscayne Beach	779	-	-	-	314	1,093
Normandy Shores	167	-	-	-	234	401
Normandy Isle	1,764	73	-	-	1,787	3,624
<i>Sub-Total:</i>	4,920	591	0	0	5,531	11,042
Grand-Total:	5,678	1,267	428	11	13,475	20,859
<i>Percentages</i>	27.2%	6.1%	2.1%	0.1%	64.6%	

Source: Walker Parking Consultants

¹ The City does not operate any parking garages within the Study Area.



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OBSERVATION PERIODS

Weekday parking occupancy counts were made on a Thursday, at 11:00 a.m., 2:00 p.m., and 7:00 p.m. Weekend counts were made on a Saturday, at 12:00 p.m., 4:00 p.m., and 9:00 p.m. The Town Center area was observed the week of April 7th and the remaining areas were observed the week of July 21st.

The observation periods were agreed upon at the start of the project during a meeting with the City.

EFFECTIVE PARKING SUPPLY

The inventory of parking within the study area is adjusted to allow for a cushion necessary for vehicles moving in and out of spaces, reduce the time necessary to find the last few remaining spaces when the parking supply is nearly full, spaces lost due to mis-parked vehicles, temporary construction, and restricted spaces. To account for this cushion, the parking inventory is adjusted to reflect the *Effective Parking Supply* ("EPS"). We derive the EPS by deducting this cushion from the total parking capacity.

A parking system operates at peak efficiency when parking occupancy is at 85 to 95 percent of the supply. When occupancy exceeds this level, patrons may experience delays and frustration while searching for a space; moreover, the parking supply may be perceived as inadequate, even though spaces are available within the parking system. As a result, we use the effective supply when analyzing the adequacy of the parking system, rather than the total supply or inventory of spaces. The following factors affect the efficiency of a parking system:

- Capacity – Large, scattered surface lots operate less efficiently than a more compact facility, such as a double-threaded helix parking structure, which offers one-way traffic that passes each available parking space one time. Moreover, it is difficult to find the available spaces in a widespread parking area rather than in a centralized parking area.
- Type of users – Monthly or regular parking patrons can find the available spaces more efficiently than infrequent visitors because they are familiar with the location of the parking options and typically know where the spaces will be available before they park.
- On-street vs. Off-street – On-street parking is less efficient than off-street due to the time it takes patrons to find the last few vacant on-street spaces. In addition, patrons are typically limited to using one side of the street at a time and often must parallel park in traffic to use an on-street space.

For this analysis, we applied a general *Effective Supply Factor* ("ESF") of 85% for the on-street spaces, 90% for off-street public spaces and 95% for off-street private spaces. The total EPS is calculated at 19,180 spaces, as shown in the following table.

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Table 2: Effective Parking Supply by Area

	On-Street	City Lot	Off-Street			Total:
			Public Garage	Public Lot	Private	
<i>ESF</i>	0.85	0.90	0.90	0.90	0.95	
Town Center	643	609	385	10	7,549	9,196
<i>Sub-Total:</i>	643	609	385	10	7,549	9,196
North Shore	1,881	466	-	-	3,043	5,390
Biscayne Beach	664	-	-	-	300	964
Normandy Shores	142	-	-	-	222	364
Normandy Isle	1,498	67	-	-	1,701	3,266
<i>Sub-Total:</i>	4,185	533	0	0	5,266	9,984
Grand-Total:	4,828	1,142	385	10	12,815	19,180

**EPS calculated by block and rounded*

Source: Walker Parking Consultants

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CURRENT CONDITIONS

Observations were conducted at three intervals on a Weekday and Saturday of all inventoried parking spaces within the study area. Observations within the Town Center area were made on Thursday, April 10, 2014 and the Saturday observations were made on Saturday April 12, 2014. The northern areas were observed on Thursday, July 24th and the Saturday observations were made on July 26th. Weather conditions during the observations were good with sunny and warm temperatures.

The following sections provide a summary of the observations for both the weekday and Saturday periods with the overall peak observation period identified for each major sub-area.

TOWN CENTER OBSERVATIONS

The overall observed occupancy levels were high, varying from 84 to 90 percent during both days. Saturday occupancy was observed to experience the highest occupancy level, at 90 percent during the 4:00 pm count. Private parking that was not directly observable is counted as being full, which influences the overall occupancy to some degree. To better understand the occupancy, it is important to review each specific type of parking. On-street parking was consistently higher during the Saturday count, reaching a high of 94 percent. City parking lots reached a high of 84 percent on Saturday.

Weekday counts for these areas were all lower, although on-street parking reached 87 percent during the evening Thursday count. The sole public parking garage experienced low occupancy during all counts and reached peak occupancy of only 36 percent during the 4:00 pm count on Saturday.

The following table provides a summary of the observations for both periods.

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Table 3: Town Center Occupancy Observations

WEEKDAY	Inventory	PEAK HOUR			SATURDAY	Inventory	PEAK HOUR		
		11:00 AM	2:00 PM	7:00 PM			12:00 PM	4:00 PM	9:00 PM
On-Street	758	615	605	658	On-Street	758	714	702	696
Occupancy Rate		81%	80%	87%	Occupancy Rate		94%	93%	92%
Unoccupied Spaces		143	153	100	Unoccupied Spaces		44	56	62
Public City Lot	676	247	258	280	Public City Lot	676	395	567	371
Occupancy Rate		37%	38%	41%	Occupancy Rate		58%	84%	55%
Unoccupied Spaces		429	418	396	Unoccupied Spaces		281	109	305
Public Garage	428	85	78	58	Public Garage	428	103	152	123
Occupancy Rate		20%	18%	14%	Occupancy Rate		24%	36%	29%
Unoccupied Spaces		343	350	370	Unoccupied Spaces		325	276	305
Public Lot	11	9	6	8	Public Lot	11	9	10	6
Occupancy Rate		82%	55%	73%	Occupancy Rate		82%	91%	55%
Unoccupied Spaces		2	5	3	Unoccupied Spaces		2	1	5
Off-Street Private	7,944	7,304	7,338	7,241	Off-Street Private	7,944	7,419	7,391	7,324
Occupancy Rate		92%	92%	91%	Occupancy Rate		93%	93%	92%
Unoccupied Spaces		640	606	703	Unoccupied Spaces		525	553	620
Total	9,817	8,260	8,285	8,245	Total	9,817	8,640	8,822	8,520
Occupancy Rate		84%	84%	84%	Occupancy Rate		88%	90%	87%
Unoccupied Spaces		1,557	1,532	1,572	Unoccupied Spaces		1,177	995	1,297

Source: Walker Parking Consultants

NORTH BEACH

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NORTH SHORE OBSERVATIONS

The overall peak observation within North Shore occurred during the 4:00 pm observation on Saturday, with 69 percent of the spaces being occupied. Added demand for beach and park visitors was evident as the City parking lots along Collins Avenue experienced heavier use than other periods during this observation. Occupancy during the weekday period peaked at 63 percent during the 7:00 pm observation.

On-street parking consistently experienced the highest occupancy levels, with 84 percent during a weekday and 92 percent during a Saturday. During the observations several blocks experienced high occupancy at or above 85 percent.

Table 4: North Shore Occupancy Observations

North Shore					PEAK HOUR				
WEEKDAY	Inventory	11:00 AM	2:00 PM	7:00 PM	SATURDAY	Inventory	12:00 PM	4:00 PM	9:00 PM
On-Street	2,210	1,422	1,505	1,856	On-Street	2,210	1,886	2,025	2,044
Occupancy Rate		64%	68%	84%	Occupancy Rate		85%	92%	92%
Unoccupied Spaces		788	705	354	Unoccupied Spaces		324	185	166
Public City Lot	518	108	139	145	Public City Lot	518	239	333	188
Occupancy Rate		21%	27%	28%	Occupancy Rate		46%	64%	36%
Unoccupied Spaces		410	379	373	Unoccupied Spaces		279	185	330
Off-Street Private	3,196	1,516	1,475	1,734	Off-Street Private	3,196	1,627	1,758	1,676
Occupancy Rate		47%	46%	54%	Occupancy Rate		51%	55%	52%
Unoccupied Spaces		1,680	1,721	1,462	Unoccupied Spaces		1,569	1,438	1,520
Total	5,924	3,046	3,119	3,735	Total	5,924	3,752	4,116	3,908
Occupancy Rate		51%	53%	63%	Occupancy Rate		63%	69%	66%
Unoccupied Spaces		2,878	2,805	2,189	Unoccupied Spaces		2,172	1,808	2,016

Source: Walker Parking Consultants

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BISCAYNE BEACH OBSERVATIONS

Biscayne Beach is a residential area with a mix of multi-family and single family residential units. The focus of our analysis is in the multi-family residential area. Overall, peak parking occupancy of 75 percent was observed during the Saturday 9:00 pm count. The peak weekday observation occurred during the 7:00 pm count with 71 percent occupancy. Several blocks were observed to experience occupancy above 85 percent within the overall area.

Table 5: Biscayne Beach Occupancy Observations

Biscayne Beach					Biscayne Beach				
WEEKDAY	Inventory	11:00 AM	2:00 PM	PEAK HOUR 7:00 PM	SATURDAY	Inventory	12:00 PM	4:00 PM	PEAK HOUR 9:00 PM
On-Street	779	475	442	599	On-Street	779	548	589	614
Occupancy Rate		61%	57%	77%	Occupancy Rate		70%	76%	79%
Unoccupied Spaces		304	337	180	Unoccupied Spaces		231	190	165
Public City Lot	0	0	0	0	Public City Lot	0	0	0	0
Occupancy Rate		-	-	-	Occupancy Rate		-	-	-
Unoccupied Spaces		-	-	-	Unoccupied Spaces		-	-	-
Off-Street Private	314	135	134	180	Off-Street Private	314	167	188	209
Occupancy Rate		43%	43%	57%	Occupancy Rate		53%	60%	67%
Unoccupied Spaces		179	180	134	Unoccupied Spaces		147	126	105
Total	1,093	610	576	779	Total	1,093	715	777	823
Occupancy Rate		56%	53%	71%	Occupancy Rate		65%	71%	75%
Unoccupied Spaces		483	517	314	Unoccupied Spaces		378	316	270

Source: Walker Parking Consultants

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NORMANDY SHORES OBSERVATIONS

The Normandy Shores occupancy data includes only two blocks with inventoried parking capacity, thus the analysis represents a concentrated observation and analysis of the parking demand. The single family residential areas within this area are excluded in the occupancy analysis, as parking within these areas is generally limited to parking in grass areas along the roadways. This count data is provided separately within this report.

Overall occupancy within the two blocks was recorded at 92 percent during the Saturday 9:00 pm count and 90 percent during the 7:00 pm weekday count.

Table 6: Normandy Shores Occupancy Observations

Normandy Shores									
WEEKDAY	Inventory	11:00 AM	2:00 PM	PEAK HOUR 7:00 PM	SATURDAY	Inventory	12:00 PM	4:00 PM	PEAK HOUR 9:00 PM
On-Street	167	131	127	131	On-Street	167	127	135	140
Occupancy Rate		78%	76%	78%	Occupancy Rate		76%	81%	84%
Unoccupied Spaces		36	40	36	Unoccupied Spaces		40	32	27
Public City Lot	0	0	0	0	Public City Lot	0	0	0	0
Occupancy Rate		-	-	-	Occupancy Rate		-	-	-
Unoccupied Spaces		-	-	-	Unoccupied Spaces		-	-	-
Off-Street Private	234	222	220	230	Off-Street Private	234	209	223	230
Occupancy Rate		95%	94%	98%	Occupancy Rate		89%	95%	98%
Unoccupied Spaces		12	14	4	Unoccupied Spaces		25	11	4
Total	401	353	347	361	Total	401	336	358	370
Occupancy Rate		88%	87%	90%	Occupancy Rate		84%	89%	92%
Unoccupied Spaces		48	54	40	Unoccupied Spaces		65	43	31

Source: Walker Parking Consultants

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NORMANDY ISLE OBSERVATIONS

Normandy Isle experienced overall peak occupancy peak occupancy levels of 76 percent during the weekday 7:00 pm observation period compared to a peak Saturday observation of 74 percent during the 9:00 pm count. On-street occupancy reached 90 percent and several blocks experienced occupancy at or above 85 percent.

Table 7: Normandy Isle Occupancy Observations

Normandy Isle									
WEEKDAY	Inventory	11:00 AM	2:00 PM	PEAK HOUR 7:00 PM	SATURDAY	Inventory	12:00 PM	4:00 PM	PEAK HOUR 9:00 PM
On-Street	1,764	1,183	1,323	1,493	On-Street	1,764	1,453	1,438	1,567
Occupancy Rate		67%	75%	85%	Occupancy Rate		82%	82%	89%
Unoccupied Spaces		581	441	271	Unoccupied Spaces		311	326	197
Public City Lot	73	13	6	29	Public City Lot	73	20	27	45
Occupancy Rate		18%	8%	40%	Occupancy Rate		27%	37%	62%
Unoccupied Spaces		60	67	44	Unoccupied Spaces		53	46	28
Off-Street Private	1,787	1,108	1,156	1,226	Off-Street Private	1,787	1,100	1,063	1,083
Occupancy Rate		62%	65%	69%	Occupancy Rate		62%	59%	61%
Unoccupied Spaces		679	631	561	Unoccupied Spaces		687	724	704
Total	3,624	2,304	2,485	2,748	Total	3,624	2,573	2,528	2,695
Occupancy Rate		64%	69%	76%	Occupancy Rate		71%	70%	74%
Unoccupied Spaces		1,320	1,139	876	Unoccupied Spaces		1,051	1,096	929

Source: Walker Parking Consultants

PARKING OCCUPANCY HEAT MAPS

To illustrate parking occupancy in greater detail, heat maps were developed to depict the parking demand observed during the overall peak Weekday and Saturday counts.

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Figure 3: Heat Map of Peak Weekday Parking Occupancy (Town Center)



Source: Walker Parking Consultants

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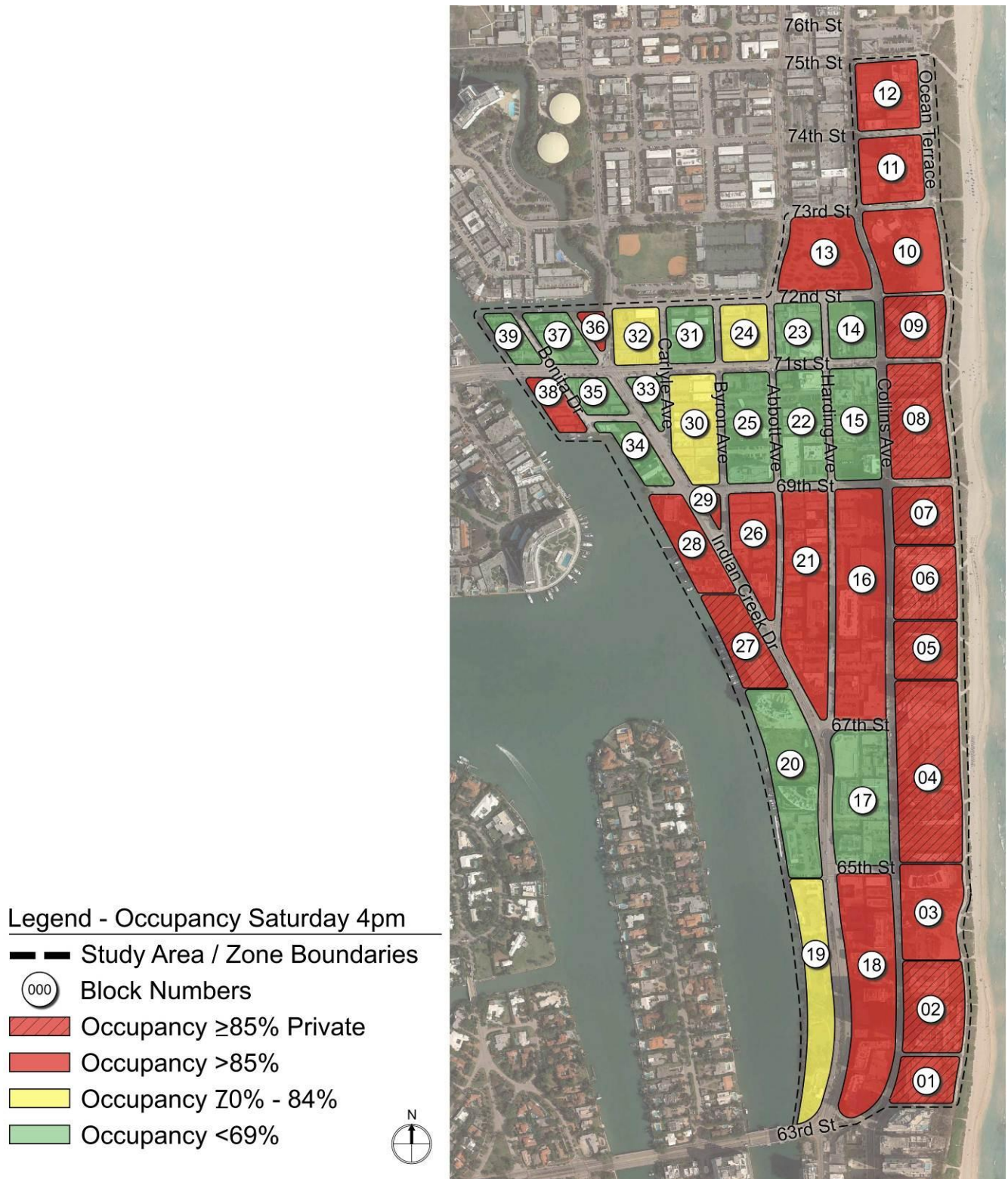


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Figure 4: Heat Map of Peak Saturday Parking Occupancy (Town Center)



Source: Walker Parking Consultants

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Figure 5: Heat Map of Peak Weekday Parking Occupancy



Occupancy - Weekday 7 pm

- Study Areas
- 000 Block Numbers
- Occupancy $\geq 85\%$
- Occupancy $\geq 70\% - 84\%$
- Occupancy $\leq 69\%$
- Single Family Homes



Source: Walker Parking Consultants

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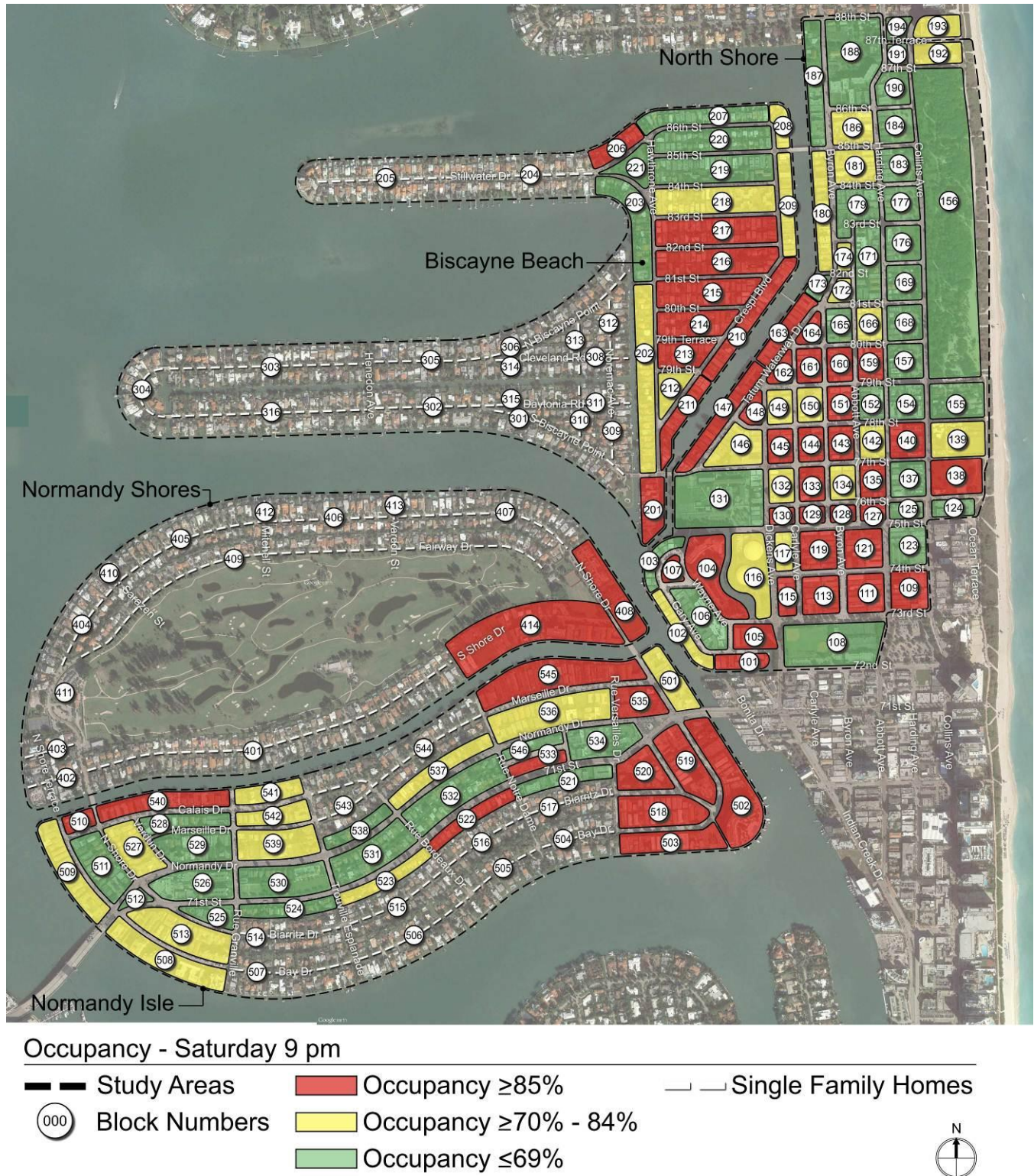
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Figure 6: Heat Map of Peak Saturday Parking Occupancy



Source: Walker Parking Consultants

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PARKING ADEQUACY

Parking adequacy is defined as the ability of the parking supply to accommodate the demand. The parking demand can vary throughout the year due to seasonality, weather, and local events. For comparison purposes, our analysis considers the observed peak conditions as representative of the parking demand for the area. The observed demand is subtracted from the effective parking supply to provide our opinion of the parking adequacy within the area.

The following is an evaluation of the overall parking adequacy by each sub-area.

TOWN CENTER PARKING ADEQUACY

Considering Town Center as a whole, on-street parking is shown to operate at a deficit level during the overall peak. The following table shows the overall parking adequacy (surplus or deficit) of parking spaces within the study area.

Table 8: North Beach - Parking Adequacy

	On-Street	Off-Street				Total:
		City Lot	Public Garage	Public Lot	Private	
Effective Supply	643	609	385	10	7,549	9,196
Demand	702	567	152	10	7,391	8,822
Adequacy	(59)	42	233	0	158	374

Source: Walker Parking Consultants

To illustrate this data on a block-by-block basis, the following table provides the data by block.

Table 9: North Beach - Parking Adequacy by Block

Block	On-Street	Public City Lot	Public Garage	Public Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
1	0				312	312	296	(16)
2	0				432	432	410	(22)
3	0	79			774	853	803	(50)
4	0				1,666	1,666	1,583	(83)
5	0				276	276	262	(14)
6	0				446	446	424	(22)
7	0				311	311	295	(16)
8	0				485	485	461	(24)

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Block	On-Street	Public City Lot	Public Garage	Public Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
9	15				540	555	513	(42)
10	16					16	13	(3)
11	65				138	203	191	(12)
12	78	111				189	171	(18)
13	29	304				333	312	(21)
14	19				9	28	44	16
15	23	17			36	76	139	63
16	71				473	544	557	13
17	17		152		67	236	540	304
18	7				74	81	74	(7)
19	0			10	31	41	39	(2)
20	0				95	95	140	45
21	82				36	118	112	(6)
22	26	40			49	115	164	49
23	13				7	20	47	27
24	8				8	16	19	3
25	18	16			285	319	436	117
26	41				45	86	85	(1)
27	0				563	563	535	(28)
28	0				162	162	162	0
29	22					22	15	(7)
30	42				33	75	82	7
31	16					16	32	16
32	13				29	42	52	10
33	4					4	7	3
34	7				9	16	69	53
35	14					14	38	24
36	16					16	11	(5)
37	18					18	32	14
38	13					13	10	(3)
39	9					9	21	12

Source: Walker Parking Consultants

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NORTH SHORE PARKING ADEQUACY

Considering North Shore as a whole, on-street parking is shown to operate at a deficit level during the overall peak. The following table shows the overall parking adequacy (surplus or deficit) of parking spaces within the study area.

Table 10: North Shore - Parking Adequacy

	On-Street	Off-Street		Total:
		City Lot	Private	
Effective Supply	1,881	466	3,043	5,390
Demand	2,025	333	1,758	4,116
Adequacy	(144)	133	1,285	1,274

Source: Walker Parking Consultants

To illustrate this data on a block-by-block basis, the following table provides the data by block.

Table 11: North Shore - Parking Adequacy by Block

Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
101	0	0	14	14	18	4
102	0	0	56	56	82	26
103	0	0	28	28	47	19
104	23	0	288	311	346	35
105	0	6	27	33	33	0
106	8	0	166	174	330	156
107	19	0	27	46	43	(3)

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Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
108	48	16	0	64	103	39
109	41	0	31	72	66	(6)
111	62	0	2	64	60	(4)
113	87	0	0	87	79	(8)
115	50	0	0	50	49	(1)
116	10	0	0	10	15	5
117	31	0	0	31	35	4
119	65	0	1	66	70	4
121	56	0	15	71	69	(2)
123	35	0	34	69	89	20
124	3	111	0	114	102	(12)
125	19	0	4	23	50	27
127	16	0	10	26	20	(6)
128	26	0	0	26	21	(5)
129	24	0	0	24	22	(2)
130	22	0	4	26	21	(5)
131	18	0	5	23	176	153
132	27	0	36	63	66	3
133	35	0	3	38	29	(9)
134	29	0	11	40	50	10
135	22	0	1	23	18	(5)
137	31	0	0	31	138	107
138	7	0	0	7	8	1
139	3	0	0	3	5	2
140	33	0	25	58	54	(4)
142	23	0	31	54	80	26
143	30	0	6	36	32	(4)

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Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
144	28	0	4	32	33	1
145	26	0	0	26	30	4
146	29	0	9	38	55	17
147	33	0	32	65	72	7
148	29	0	11	40	39	(1)
149	29	0	13	42	56	14
150	26	0	32	58	93	35
151	39	0	9	48	46	(2)
152	39	0	21	60	67	7
154	32	0	50	82	117	35
155	2	0	0	2	5	3
156	78	0	0	78	68	(10)
157	22	27	21	70	94	24
159	32	0	4	36	30	(6)
160	26	0	30	56	53	(3)
161	32	0	5	37	33	(4)
162	16	0	0	16	22	6
163	20	0	29	49	62	13
164	20	0	0	20	20	0
165	36	0	2	38	51	13
166	37	0	15	52	60	8
168	28	38	26	92	130	38
169	24	0	4	28	39	11
171	31	0	32	63	90	27
172	20	0	30	50	75	25
173	3	0	24	27	50	23
174	18	0	18	36	55	19
176	32	0	35	67	100	33
177	24	48	0	72	122	50
179	36	21	11	68	99	31
180	30	0	22	52	67	15
181	52	0	20	72	84	12
183	24	52	5	81	91	10
184	28	0	14	42	61	19

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Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
186	36	0	19	55	70	15
187	23	0	28	51	79	28
188	29	0	168	197	306	109
189	20	0	10	30	52	22
191	4	14	12	30	61	31
192	20	0	58	78	90	12
193	0	0	110	110	129	19
194	9	0	0	9	8	(1)

Source: Walker Parking Consultants

BISCAYNE BEACH PARKING ADEQUACY

Considering Biscayne Beach as a whole, overall parking is considered adequate, with a small surplus. The following table shows the overall parking adequacy (surplus or deficit) of parking spaces within the study area.

Table 12: Biscayne Beach - Parking Adequacy

	On-Street	Off-Street		Total:
		City Lot	Private	
Effective Supply	664	0	300	964
Demand	614	0	209	823
Adequacy	50	0	91	141

Source: Walker Parking Consultants

To illustrate this data on a block-by-block basis, the following table provides the data by block.

Table 13: Biscayne Beach - Parking Adequacy by Block

Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
201	7	0	0	7	7	0
202	15	0	0	15	15	0
203	10	0	0	10	20	10
206	7	0	0	7	5	(2)

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Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
207	10	0	0	10	13	3
208	1	0	6	7	10	3
209	34	0	19	53	65	12
210	38	0	24	62	56	(6)
211	26	0	0	26	23	(3)
212	29	0	0	29	35	6
213	26	0	12	38	37	(1)
214	30	0	7	37	34	(3)
215	85	0	18	103	96	(7)
216	75	0	6	81	77	(4)
217	113	0	7	120	118	(2)
218	64	0	56	120	133	13
219	37	0	46	83	154	71
220	0	0	8	8	42	34
221	7	0	0	7	24	17

Source: Walker Parking Consultants

NORMANDY SHORES PARKING ADEQUACY

Considering Normandy Shores as a whole, overall parking is at a deficit level. The main reason is the lack of private parking to meet the peak parking demand. The following table shows the overall parking adequacy (surplus or deficit) of parking spaces within the study area.

Table 14: Normandy Shores - Parking Adequacy

	On-Street	Off-Street		Total:
		City Lot	Private	
Effective Supply	142	0	222	364
Demand	140	0	230	370
Adequacy	2	0	(8)	(6)

Source: Walker Parking Consultants

To illustrate this data on a block-by-block basis, the following table provides the data by block.

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Table 15: Normandy Shores - Parking Adequacy by Block

Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
408	55	0	0	55	49	(6)
414	85	0	230	315	315	0

Source: Walker Parking Consultants

NORMANDY ISLE PARKING ADEQUACY

Considering Normandy Isle as a whole, overall parking is considered adequate, with a surplus due to the private parking supply. Public parking is very limited, with most public parking spaces limited to on-street parking, which has no surplus. The following table shows the overall parking adequacy of parking spaces within the study area.

Table 16: Normandy Isle - Parking Adequacy

	Off-Street			
	On-Street	City Lot	Private	Total:
Effective Supply	1,453	67	1,701	3,221
Demand	1,453	29	1,226	2,708
Adequacy	0	38	475	513

Source: Walker Parking Consultants

To illustrate this data on a block-by-block basis, the following table provides the data by block.

Table 17: Normandy Shores - Parking Adequacy by Block

Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
501	17	0	44	61	85	24
502	53	0	309	362	361	(1)
503	61	0	13	74	70	(4)
508	61	0	71	132	170	38
509	32	0	50	82	102	20
510	15	0	22	37	38	1

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Block #	On-Street	Public City Lot	Off-Street Private	Total	Effective Supply	Surplus/ (Deficit)
511	30	0	31	61	67	6
512	0	0	5	5	8	3
513	88	0	97	185	235	50
518	104	0	50	154	174	20
519	53	20	104	177	201	24
520	58	0	40	98	102	4
521	15	0	40	55	57	2
525	3	0	9	12	53	41
526	18	0	89	107	161	54
527	17	0	32	49	58	9
528	68	0	0	68	82	14
529	49	0	53	102	145	43
530	67	0	0	67	75	8
531	35	0	0	35	32	(3)
532	46	0	0	46	43	(3)
533	15	0	42	57	62	5
546	42	0	5	47	50	3
534	39	9	27	75	112	37
535	30	0	46	76	100	24
536	123	0	21	144	179	35
537	16	0	0	16	24	8
538	18	0	0	18	17	(1)
539	61	0	4	65	87	22
540	68	0	0	68	78	10
541	30	0	0	30	37	7
542	43	0	0	43	52	9
545	78	0	22	100	104	4

Source: Walker Parking Consultants



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RESIDENTIAL PARKING DEMAND

Several areas within the overall study area is devoted to residential land uses. In areas where single family homes are predominant, parking is limited to private driveways and along the street. In most cases on-street parking is not marked or non-existent. A count of actual vehicles parked along these roadways was conducted and tabulated below. These areas are shown on the map as dashed lines and correspond to the table below.

Table 18: Residential Parking Observations

Area #	Weekday			Saturday		
	11:00 AM	3:00 PM	7:00 PM	12:00 PM	4:00 PM	9:00 PM
204	18	21	20	15	17	11
205	6	7	7	3	11	12
301	3	8	3	7	6	4
302	9	6	1	4	8	3
303	9	7	1	3	1	3
304	1	2	0	0	0	0
305	14	8	4	5	4	2
306	6	5	2	7	6	8
308	0	0	0	1	1	3
309	3	3	1	1	3	3
310	3	1	3	1	0	0
311	1	0	0	0	1	3
312	2	1	1	1	1	12
313	0	0	0	2	2	2
314	5	1	2	2	1	1
315	6	4	0	1	1	0
316	10	7	2	6	6	7
401	33	23	28	21	19	14
402	0	0	0	0	0	0
403	0	1	0	0	1	0
404	2	4	1	3	1	1
405	3	6	7	7	8	5
406	1	6	4	1	1	0
407	0	4	4	9	11	5

(continued on next page)

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Area #	Weekday			Saturday		
	11:00 AM	3:00 PM	7:00 PM	12:00 PM	4:00 PM	9:00 PM
409	17	20	28	16	33	14
410	1	1	1	1	2	0
411	31	24	12	53	26	2
412	0	2	0	0	0	1
413	1	1	2	1	1	1
504	7	7	6	13	8	12
505	5	3	2	1	1	2
506	10	8	9	12	18	13
507	9	7	8	2	4	6
514	10	12	17	11	16	22
515	9	5	11	9	11	12
516	13	13	18	14	19	18
517	9	7	6	9	10	10
543	0	0	0	0	0	0
544	12	11	15	20	16	18

Source: Walker Parking Consultants

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PARKING TURNOVER

Walker conducted a parking turnover analysis using a sample of parking spaces within the study area. Spaces were observed on an hourly basis over the course of a day, and each space was noted as being empty or with a portion of parked vehicle's license plate number on a weekday and a weekend. The data allows the average length of stay to be calculated as well as the parking utilization of the sample. The tables below summarize the specific samples for the weekday and weekend observations for Town Center (collected in April 2014) and the remaining areas (collected in July 2014).

Table 19: Town Center - Weekday Occupancy Sample

LPI Occupancy Results				Hourly Occupancies								Peak Hour
Area	Street:	Location	Sample	10:30am	11:30am	12:30pm	1:30pm	2:30pm	3:30pm	4:30pm	5:30pm	12:30pm
TC	MB Lot 81	lot	15	8	8	10	9	10	9	7	7	10
TC	Collins	67th Street	11	11	11	11	10	8	10	9	11	11
TC	Collins	69th Street	15	9	12	14	12	12	14	13	15	14
TC	Collins	71st Street	7	7	7	7	7	7	7	7	7	7
TC	73rd Street	Collins	15	13	15	14	13	13	14	13	11	14
TC	Ocean Terrace	73rd Street	19	15	19	19	15	14	15	19	17	19
TC	Collins	74th Street	12	8	10	10	11	12	11	12	12	10
TC	Byron	71st Street	26	21	22	20	19	22	22	21	21	20
TC	69th Street	Abbot	6	6	5	6	6	5	6	3	5	6
TC	Britt Bay Park	Lot	7	7	4	6	6	4	0	3	2	6
Totals			133	105	113	117	108	107	108	107	108	117
% Occupied				79%	85%	88%	81%	80%	81%	80%	81%	88%

Source: Walker Parking Consultants, Friday, April 11, 2014

Table 20: Town Center - Weekday Length of Stay

LPI Length of Stay Results				Length of Stay								Average
Area	Street:	Location:	Sample	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	
TC	MB Lot 81	lot	15	11	6	1	3	0	1	0	3	2.7
TC	Collins	67th Street	11	17	8	5	3	0	2	0	1	2.3
TC	Collins	69th Street	15	28	18	1	4	2	0	0	1	1.9
TC	Collins	71st Street	7	18	9	0	3	0	0	0	1	1.8
TC	73rd Street	Collins	15	36	13	4	0	1	2	1	1	1.8
TC	Ocean Terrace	73rd Street	19	25	29	6	2	1	2	1	0	2.0
TC	Collins	74th Street	12	41	9	0	0	1	0	2	1	1.6
TC	Byron	71st Street	26	7	11	4	7	2	2	3	7	3.9
TC	69th Street	Abbot	6	10	1	0	2	3	0	1	0	2.5
TC	Britt Bay Park	Lot	7	12	1	3	1	1	0	0	0	1.8
Totals:			133	205	105	24	25	11	9	8	15	2.3
Total Hours:				205	210	72	100	55	54	56	120	

Source: Walker Parking Consultants, Friday, April 11, 2014

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Table 21: Town Center - Weekend Occupancy Sample

LPI Occupancy Results				Hourly Occupancies								Peak Hour
Area	Street:	Location:	Total Inventory	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	3:00 PM
TC	Harding Street	72nd	27	15	15	21	19	15	20	16	20	19
TC	69th Street	Harding	6	5	5	3	4	4	3	3	6	4
TC	Collins	69th Street	21	16	19	19	20	19	18	19	20	20
TC	72nd	Collins	10	10	7	10	10	9	8	10	10	10
TC	Collins	73rd Street	11	11	11	10	11	10	11	9	10	11
TC	74th Street	Collins	6	6	5	6	6	6	6	5	5	6
TC	Ocean	74th Street	10	10	10	10	10	10	9	10	10	10
TC	73rd Street	Ocean	12	11	11	10	11	12	11	11	10	11
TC	Abbott	69th Street	26	26	25	25	25	25	25	25	25	25
TC	Britt Bay Park	Lot	10	9	10	9	10	10	10	10	9	10
TC	MB 81	West	23	23	23	23	23	23	23	23	22	23
Totals			162	142	141	146	149	143	144	141	147	149
% Occupied				88%	87%	90%	92%	88%	89%	87%	91%	92%

Source: Walker Parking Consultants, Saturday, April 12, 2014

Table 22: Town Center - Weekend Length of Stay

LPI Length of Stay Results				Length of Stay								Average
Area	Street:	Location:	Sample	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	
TC	Harding Street	72nd	27	61	10	9	1	2	1	0	1	1.7
TC	69th Street	Harding	6	7	5	1	0	1	0	0	1	2.2
TC	Collins	69th Street	21	70	20	6	2	0	1	0	1	1.5
TC	72nd	Collins	10	43	12	1	1	0	0	0	0	1.3
TC	Collins	73rd Street	11	34	14	3	1	0	0	0	1	1.6
TC	74th Street	Collins	6	9	0	1	2	2	0	1	1	2.8
TC	Ocean	74th Street	10	10	10	7	4	1	0	1	0	2.4
TC	73rd Street	Ocean	12	17	6	5	3	2	1	1	1	2.4
TC	Abbott	69th Street	26	11	2	5	5	1	2	2	15	4.7
TC	Britt Bay Park	Lot	10	5	3	3	3	0	1	1	4	3.9
TC	MB 81	West	23	11	6	9	3	4	3	5	6	3.9
Totals:			162	278	88	50	25	13	9	11	31	2.3
Total Hours:				278	176	150	100	65	54	77	248	

Source: Walker Parking Consultants, Saturday, April 12, 2014

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PARKING TURNOVER – NORTHERN AREAS

Table 23: Northern Areas - Weekday Occupancy Sample

LPI Occupancy Results				Hourly Occupancies							Peak Hour
Area	Street:	Location	Sample	10:00 AM	11:00 AM	12:00 PM	1:00 PM	3:00 PM	4:00 PM	5:00 PM	4:00 PM
NS	Byron	73rd	52	44	47	49	50	48	51	51	51
NS	Carlyle	77th	30	20	19	20	19	15	14	15	14
NS	80th Street	Harding	23	13	10	13	14	16	15	16	15
NS	Lot 91	lot	25	19	15	12	13	13	12	13	12
NS	Lot 106	lot	49	28	31	40	40	36	41	40	41
NI	Maimonides St	Vichy	36	32	33	28	22	27	25	19	25
NI	Brest Esplanade	Biarritz	65	57	49	53	55	63	63	64	63
NI	Normandy	Trouville Espanade	27	16	14	15	15	13	21	22	21
NI	Lot 87	lot	25	5	8	5	6	2	2	4	2
Totals				332	234	226	235	234	233	244	244
% Occupied					70%	68%	71%	70%	70%	73%	73%

Source: Walker Parking Consultants, Friday, July 25, 2014

Table 24: Northern Areas - Weekday Length of Stay

LPI Length of Stay Results				Length of Stay							
Area	Street:	Location:	Sample	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	Average
NS	Byron	73rd	52	24	19	9	8	6	7	21	3.6
NS	Carlyle	77th	30	13	4	10	10	2	0	3	2.9
NS	80th Street	Harding	23	28	5	2	4	2	1	3	2.2
NS	Lot 91	lot	25	23	8	2	1	3	2	3	2.3
NS	Lot 106	lot	49	56	30	22	6	2	2	4	2.1
NI	Maimonides St	Vichy	36	33	19	13	6	2	2	4	2.4
NI	Brest Esplanade	Biarritz	65	39	20	17	10	3	5	27	3.3
NI	Normandy	Trouville Espanade	27	13	12	2	4	3	0	6	2.9
NI	Lot 87	lot	25	16	4	0	2	0	0	0	1.5
Totals:				332	245	121	77	51	23	19	71
Total Hours:					245	242	231	204	115	114	497
											2.6

Source: Walker Parking Consultants, Friday, July 25, 2014

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Table 25: Northern Areas - Weekend Occupancy Sample

LPI Occupancy Results				Hourly Occupancies								Peak Hour	
Area	Street:	Location	Sample	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	11:00 AM	
NI	Normandy	Vichy	11	11	11	6	5	6	3	3	5	11	
NI	Maimonides St	Notre Dame	37	33	35	17	13	12	13	15	10	33	
NI	Trouville Esplanades	Normandy	21	15	16	11	12	9	14	16	15	15	
NI	Lot 87	lot	26	17	12	12	14	15	10	8	12	17	
NI	Vendrome	71st	34	33	33	34	34	33	34	33	34	33	
PVI	Wayne Ave	73rd Street	24	19	17	17	16	23	22	24	20	19	
NS	73rd	Dickens	17	17	17	16	13	13	14	16	15	17	
NS	Byron	73rd	26	25	26	26	25	26	26	26	26	25	
NS	74th	Byron	21	21	19	20	19	20	20	20	20	21	
NS	PB 106	Lot	44	41	40	44	43	44	43	44	44	41	
NS	81st	Harding	11	10	11	11	10	11	10	10	11	10	
Totals				272	242	237	214	204	212	209	215	212	242
% Occupied					89%	87%	79%	75%	78%	77%	79%	78%	89%

Source: Walker Parking Consultants, Saturday, July 26, 2014

Table 26: Northern Areas - Weekend Length of Stay

LPI Length of Stay Results				Length of Stay								Average	
Area	Street:	Location:	Sample	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr		
NI	Normandy	Vichy	11	8	8	2	3	0	0	0	1	2.3	
NI	Maimonides St	Notre Dame	37	17	22	5	4	2	2	1	3	2.6	
NI	Trouville Esplanad	Normandy	21	24	17	4	3	0	3	0	1	2.6	
NI	Lot 87	lot	26	40	7	1	1	3	0	0	3	1.8	
NI	Vendrome	71st	34	12	10	8	3	5	8	1	15	4.3	
PVI	Wayne Ave	73rd Street	24	19	7	7	6	2	1	0	8	3.2	
NS	73rd	Dickens	17	4	7	9	2	1	0	1	7	3.9	
NS	Byron	73rd	26	6	3	5	1	1	3	0	19	5.4	
NS	74th	Byron	21	9	5	1	5	2	2	1	11	4.4	
NS	PB 106	Lot	44	39	35	18	16	4	5	6	3	2.7	
NS	81st	Harding	11	8	2	2	2	1	1	1	5	3.8	
Totals:				272	186	123	62	46	21	25	11	76	3.1
Total Hours:					186	246	186	184	105	150	77	608	

Source: Walker Parking Consultants, Saturday, July 26, 2014

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FUTURE CONDITIONS

The basis for projecting short-term future parking conditions is based on adding the parking demand and supply changes of planned developments within the study area. Known or planned developments consist of projects registered with the Miami Beach Planning Department that include details on the planned type and size of the land use. Some of these projects are currently under construction while others are still in the planning stage. In addition to accounting the known projects, historical growth rates of criteria that directly influence area activity and parking demand are applied to project potential long-term parking conditions.

PLANNED DEVELOPMENTS

Several residential – multi-family condominium projects within the study area are included in the near term. All but one is assumed to include some additional parking. The following table details the projects and assumptions. Impacts to parking conditions from the projects are assumed to occur within the next three years.

Table 27: Future Project

BLOCK	Description	Residential (Units)	Retail (SF)	Parking Spaces	Lost Parking
191-192	Mixed-Use	24	10,960	200	97
408	Residential - Condo	43		86	-
513	Residential - Condo	6		12	-
521	Residential - Condo	4		8	-
536	Residential - Condo	6		12	-
127	Residential - Condo	4		8	-
210	Residential - Condo	4		8	-
169	Residential - Condo	4		8	-
184	Residential - Condo	6		-	-
209	Residential - Condo	18		36	-

Source: Miami Beach Planning Department and Walker Parking Consultants

Based on the size of the project, additional parking demand of 174 spaces during the peak observation period is projected. Demand is calculated by multiplying the number of units by the base demand ratio and adjusting by demand factors as shown in the following table.

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Table 28: Added Parking Demand

Description	Residential (Units)	Retail (SF)
Total Added Land Use:	119	10,960
Base Demand Ratio	1.75	4.00
Non-Captive Ratio	1.00	0.20
Drive Ratio	0.80	0.80
Time of Day	1.00	1.00
Added Demand	167	7
Total Demand:	174	

Source: Walker Parking Consultants

CHANGES TO PARKING SUPPLY

Surface parking adjacent to the existing Howard Johnsons Hotel will be displaced along with vacated on-street parking along 87th Terrace for the new condominium development at 8701 N. Collins. New parking is planned at this site within a parking structure, which includes mechanical lifts to increase capacity. Each new residential development is assumed to provide 1.5 spaces per unit unless more detailed information is available. The only exception is for additions to existing apartments and apartment-hotels in which the existing building will be substantially retained, preserved, and restored that are located within National Register District, up to a maximum of 2,500 square feet, which do not require providing any additional parking per ordinance.

HISTORICAL GROWTH

The annual growth rates for several key criteria were analyzed to project three potential future growth scenarios for the North Beach study area. The basis of the data is the *Economic Conditions* report compiled and provided by the Tourism, Cultural & Economic Development Department. Factors considered include North Beach annual hospitality sales; average daily population statistics; hotel occupancy rate; and North Beach jobs. Annual growth rates are calculated for each period covering 2007 – 2012 as shown in the following table. The criteria for all periods generate positive growth, with the exception of the number jobs, which indicate a steady decline.

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Table 29: Historical Annual Growth Data

Annual Periods		5	4	3	2	1
Criteria		'07-'12	'08-'12	'09-'12	'10-'12	'11-'12
NB	Hotel Room Sales	6.9%	7.5%	8.3%	12.5%	100.1%
	Food Sales	8.0%	9.4%	10.1%	11.0%	15.3%
	Alcohol Sales	8.0%	5.8%	8.4%	10.4%	4.7%
	Hospitality Sales	7.3%	8.0%	8.8%	11.9%	56.6%
Average Daily Population		4.3%	5.7%	4.9%	5.2%	10.1%
Hotel Occupancy		0.6%	1.1%	5.1%	5.3%	0.2%
NB	Jobs	-2.3%	-3.3%	-3.2%	-4.0%	-4.9%
	Average Annual Growth	2.5%	2.9%	3.9%	4.6%	15.5%

Source: Select data from the Current Economic Conditions Report and Walker Parking Consultants

GROWTH SCENARIOS

Based on the historical data shown in the previous table and our understanding of the potential for development within the selected study area, three annual growth scenarios were developed to project the overall change in the parking demand. The annual growth rate percentage scenarios are shown below.

Table 30: Annual Growth Scenarios

Scenario	Annual Growth Rate	Consideration
1	2.5%	(Smallest Average Annual Growth)
2	3.9%	(Median Average Growth)
3	6.8%	(80th Percentile of Average Annual Growth)

Source: Select data from the Current Economic Conditions Report and Walker Parking Consultants

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FUTURE PARKING ADEQUACY

The projected parking adequacy over the next ten years is provided for Town Center and the northern areas for each of the three annual growth rate scenarios. The projections shown assume the listed future projects are completed and occupied within the next 36 months. Private parking areas are excluded from the annual growth as they are already counted as being fully occupied.

Table 31: Projected Future Parking Adequacy – Town Center

Year	EPS	Scenario 1		Scenario 2		Scenario 3	
		Demand	Adequacy	Demand	Adequacy	Demand	Adequacy
2015	9,196	8,999	197	9,028	168	9,086	110
2016	9,196	9,054	142	9,115	81	9,241	(45)
2017	9,196	9,110	86	9,205	(9)	9,407	(211)
2018	9,196	9,168	28	9,299	(103)	9,584	(388)
2019	9,196	9,227	(31)	9,396	(200)	9,773	(577)
2020	9,196	9,288	(92)	9,497	(301)	9,975	(779)
2021	9,196	9,350	(154)	9,602	(406)	10,190	(994)
2022	9,196	9,414	(218)	9,711	(515)	10,420	(1,224)
2023	9,196	9,479	(283)	9,824	(628)	10,666	(1,470)
2024	9,196	9,546	(350)	9,942	(746)	10,928	(1,732)

Source: Walker Parking Consultants

Table 32: Projected Future Parking Adequacy – Northern Areas

Year	EPS	Scenario 1		Scenario 2		Scenario 3	
		Demand	Adequacy	Demand	Adequacy	Demand	Adequacy
2015	9,984	7,971	2,013	8,073	1,911	8,275	1,709
2016	9,984	8,150	1,834	8,361	1,623	8,787	1,197
2017	10,193	8,508	1,685	8,834	1,359	9,507	686
2018	10,193	8,701	1,492	9,152	1,041	10,102	91
2019	10,193	8,898	1,295	9,482	711	10,737	(544)
2020	10,193	9,100	1,093	9,825	368	11,415	(1,222)
2021	10,193	9,307	886	10,181	12	12,139	(1,946)
2022	10,193	9,519	674	10,551	(358)	12,912	(2,719)
2023	10,193	9,737	456	10,936	(743)	13,738	(3,545)
2024	10,193	9,960	233	11,336	(1,143)	14,620	(4,427)

Source: Walker Parking Consultants

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Considering the overall parking adequacy within the study area, parking appears to be adequate for the immediate future. While this is the condition within the larger area, it is somewhat misleading, as half the parking is considered private or restricted for specific user. The primary land use within the study area is residential, which may have limited ability to expand based on the current occupancy levels. More likely, increased parking demand will come from redevelopment projects.

Several blocks throughout the study area currently experience high demand and are considered to have inadequate parking based on observations. Future growth in parking demand is very likely based on the historical census data and more areas will likely experience deficits in parking adequacy further adding to those areas already experiencing deficits in parking.



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PARKING MANAGEMENT STRATEGIES

The following strategies are provided to enhance or improve the parking experience or reduce parking demand within the study area.

RESIDENTIAL PARKING ZONES

The City of Miami Beach currently provides residential parking zones in several areas of South Beach. Residential parking zones allow the on-street parking located in residential area to be used by legitimate residents located within the zone. Establishing a residential parking zone requires a majority of the local residents within the specific zone to vote and approve the parking zone. Once established, only residents within the area qualify to obtain a residential parking permit. This allows normally unrestricted parking to be reserved for residents and a limited number of guests to ensure non-residents do not park within the residential parking zone during the posted restricted time periods.



OPTIONS WITHIN RESIDENTIAL PARKING ZONES

Specific Days/Hours of enforcement: This applies the restrictions during specific periods when residents are most likely in need of parking, such as in the evenings and weekends. This allows the spaces to be used by non-residents during un-restricted parking times.

Residential zones to 24/7 enforcement: While this provides a solution, it greatly reduces the availability of parking in certain areas that would otherwise benefit from sharing the parking assets when they are typically not needed by residents.

Adding paid parking for times during un-restricted parking: Parking meters are already located in some residential parking zones for use during non-restricted time periods. This can be effective, but may not be aesthetically desirable for some residential areas. In addition, the cost to install and maintain may not be justifiable as the main reason some of these un-restricted spaces are used is because there is no fee to park in these spaces.

Adding time restrictions during un-restricted parking periods: This option promotes turnover of the spaces during non-restricted time periods; however, it does require additional enforcement. It may also be a disadvantage for actual residents parking in the area.

Adding restrictions for non-residents while providing exemptions to permit holders: This option adds restrictions to non-residential permit holders during un-restricted time periods to encourage turn-over and discourages abuse of the parking during non-restricted time periods. Monterey, California allows residential permit holders to enjoy parking in their permit zones and to ignore posted time limit restrictions. In addition, registered permit holders may pay a discount for parking if payment is required.

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To enforce unique restrictions within residential zones, a database of valid permit holder vehicle license plates allows mobile license plate recognition cameras to scan and identify non-registered vehicles. These systems can also be used to track length of stay for non-registered vehicles. While not 100 percent, these systems can greatly improve enforcement and reduce the time needed to manually check each vehicle within an area and allow more frequent checks to verify length of stay.

ENHANCED WAYFINDING AND SIGNAGE

Each city owned public parking lot is clearly marked and uniformly signed within the study area. The information provided corresponds to the information found on the Miami Beach parking App, hosted by ParkMe. The area of parking wayfinding that could be improved is signage guiding patrons to the off-street parking. Additional directional signage along key thoroughfares should be added to direct patrons to parking so that more than one sign is provided to guide patrons to the public parking.

At some point dynamic signage can be added that shows the number of available spaces or if spaces are available with an arrow to provide directions. This is typically done for garages or larger surface lots where equipment is in place and tracking the counts. Strategically placed signs with real time dynamic messages can direct users to the nearest parking facility with available spaces. Although more common in Europe, several U.S. cities, including Seattle, San Jose, and Charlotte have installed these types of parking wayfinding systems.



Dynamic wayfinding signage installed in Seattle, Washington

BRANDING AND PROMOTING PARKING

Miami Beach has a website incorporated with the city website, as well as an App, to assist in promoting parking. Some cities have taken this a step further by branding their parking program with a unique logo and phrase. Branding examples include SF Park in San Francisco, L.A. Express Park in Los Angeles, the "Five Seasons" Transportation and Parking Department of Cedar Rapids, Iowa, and "Central City Parking" in Downtown Kalamazoo, Michigan. Branding can assist with educating the public on parking and providing a recognizable image to go to when thinking about parking.



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Verbal elements should include a name, style, and taglines. Visual elements include fonts, colors, shapes, and graphic elements (including logo). The elements and standards of the program should be used in a consistent manner. Ubiquity is achieved by using a full range of appropriate media.

Actively communicating and marketing the available public parking spaces is a never ending marketing campaign. Many cities have developed brochures with a map showing public parking areas, city web-site links to a page that contains downtown parking information, and consistent signage and banners directing customers to public parking areas. The city's webpage can be linked to merchant and downtown association websites to encourage visitors to learn about parking before coming downtown. Downtown businesses and government offices should have parking brochures with maps available for the general public.

Evanston, Illinois, developed a "Where to park in Downtown Evanston" flyer and provided a copy on ticketed vehicles. The brochure includes a map of public parking options with rates designed to assist parkers so that they can avoid a ticket in the future.



DYNAMIC PRICING

Charging for parking is an effective strategy to encourage turnover and reducing parking demand. Some cities have effectively instituted dynamic pricing to further manage parking demand based the actual parking demand. Los Angeles, Seattle, and San Francisco all use parking occupancy to adjust on-street parking rates. Generally, occupancy greater than 85 percent results in a higher price. Occupancy levels below 85 percent result in a lower parking rate. Over time, this approach has been shown to spread parking demand to underutilized areas. Occupancy can be measured with sensors or regular visual counts. Changes to parking rates are typically subject to a maximum adjustment amount, frequency, and advance notification of changes.

Los Angeles California uses variable pricing by time of day, to reduce prices during known low demand periods and increase rates during known peak demand periods.

This strategy may be useful in Miami Beach during peak weekends or in season demand periods. Increases in funds may be used to add additional parking or features to the system. The popularity of the area may limit the effectiveness of the program in Miami Beach, as there are limited areas in the study area to redistribute parking demand during peak demand periods.



OCTOBER 14, 2014

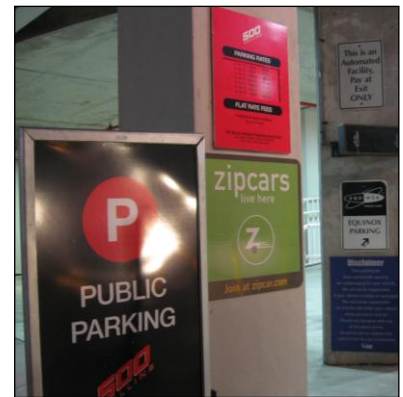
PROJECT # 15-1988.00

CAR SHARING PROGRAMS

Car sharing was noted as available in at least one location in Miami Beach at the 500 Collins garage. Car sharing can reduce parking demand by providing a network of privately owned vehicles that are rented by the hour or day to registered users. Costs for using a vehicle include all typical ownership costs, including gas and insurance. By having a car share service available, participants can have use of a vehicle when needed without having to actually own a vehicle. Studies and surveys indicate each car share vehicle in service can be used by 6 to 10 households, thus reducing parking and traffic congestion where successfully implemented.

- 2005 Transportation Research Board reported 21 percent of car share members gave up a vehicle after joining.
- 2006 survey by Flexcar and Zipcar in Washington DC indicated 30 percent of car share members gave up a vehicle after joining and 61 percent postponed purchasing another vehicle.

Some cities assist in promoting car sharing by providing strategically reserved parking spaces to store vehicles when not in use. Vendors include Zipcar, Hertz Connect, U-Haul Car Share, and Enterprise Car Share.



The large number of residential units in North Beach could allow car sharing to reduce parking demand and give residents a viable option to vehicle ownership.

PARKING RESERVATIONS

Allowing parking reservations may be an option to increase the level of service and provide premium pricing. Parking reservations allow users to request a parking space in advance if available and guarantee that space with a premium charge. Users receive a confirming bar code that can be presented to enter the facility even when the facility is shown as full. This type of system can be used to reduce stress for users and increase revenue for the parking facility. While currently limited based on the current infrastructure in North Beach, this could be a strategy for consideration at some privately owned parking facilities.


APPENDIX

OCCUPANCY MAPS



WALKER
PARKING CONSULTANTS

Legend - Occupancy Weekday 11am

 Study Area / Zone Boundaries

 Block Numbers

 Occupancy $\geq 85\%$ Private

 Occupancy $> 85\%$

 Occupancy 70% - 84%

 Occupancy $< 69\%$



NORTH BEACH

PARKING DEMAND ANALYSIS



WALKER
PARKING CONSULTANTS

APPENDIX

PROJECT # 15-1988.00

Legend - Occupancy Weekday 2pm

— Study Area / Zone Boundaries



Block Numbers

 Occupancy $\geq 85\%$ Private

 Occupancy $> 85\%$

 Occupancy 70% - 84%

 Occupancy $< 69\%$



NORTH BEACH

PARKING DEMAND ANALYSIS



WALKER
PARKING CONSULTANTS

APPENDIX

PROJECT # 15-1988.00

Legend - Occupancy Weekday 7pm

— Study Area / Zone Boundaries




Block Numbers

 Occupancy $\geq 85\%$ Private

 Occupancy $> 85\%$

 Occupancy 70% - 84%

 Occupancy $< 69\%$



NORTH BEACH

PARKING DEMAND ANALYSIS



WALKER
PARKING CONSULTANTS

APPENDIX

PROJECT # 15-1988.00

Legend - Occupancy Saturday 12pm

— Study Area / Zone Boundaries




Block Numbers

 Occupancy $\geq 85\%$ Private

 Occupancy $> 85\%$

 Occupancy 70% - 84%

 Occupancy $< 69\%$



NORTH BEACH

PARKING DEMAND ANALYSIS



WALKER
PARKING CONSULTANTS

APPENDIX

PROJECT # 15-1988.00

Legend - Occupancy Saturday 4pm

Study Area / Zone Boundaries



Block Numbers

Occupancy $\geq 85\%$ Private

Occupancy $> 85\%$

Occupancy 70% - 84%

Occupancy $< 69\%$



NORTH BEACH

PARKING DEMAND ANALYSIS



WALKER
PARKING CONSULTANTS

APPENDIX

PROJECT # 15-1988.00

Legend - Occupancy Saturday 9pm

— Study Area / Zone Boundaries



Block Numbers

 Occupancy $\geq 85\%$ Private

 Occupancy $> 85\%$

 Occupancy 70% - 84%

 Occupancy $< 69\%$



NORTH BEACH

PARKING DEMAND ANALYSIS

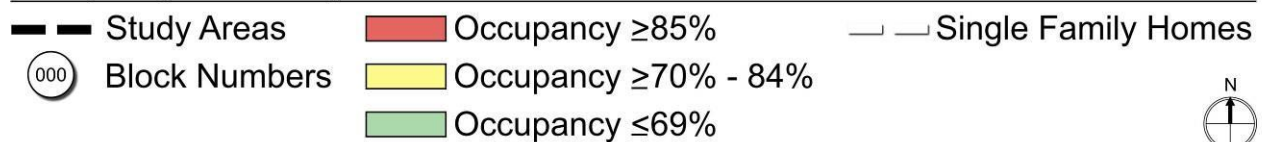


APPENDIX

PROJECT # 15-1988.00



Occupancy - Weekday 11 am



NORTH BEACH

PARKING DEMAND ANALYSIS

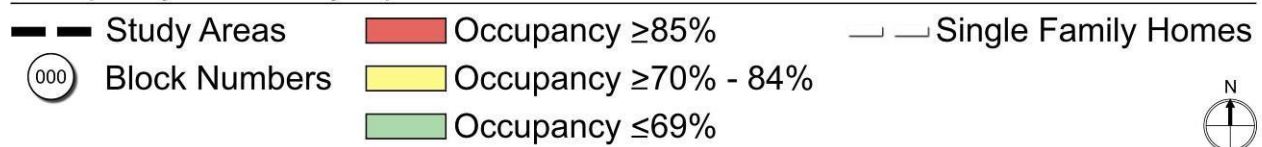


APPENDIX

PROJECT # 15-1988.00



Occupancy - Weekday 3 pm



NORTH BEACH

PARKING DEMAND ANALYSIS

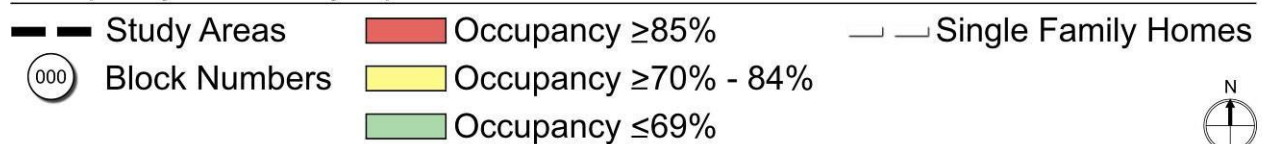


APPENDIX

PROJECT # 15-1988.00



Occupancy - Weekday 7 pm



NORTH BEACH

PARKING DEMAND ANALYSIS



APPENDIX

PROJECT # 15-1988.00



Occupancy - Saturday 12 pm

- Study Areas
- 000 Block Numbers
- Occupancy $\geq 85\%$
- Occupancy $\geq 70\% - 84\%$
- Occupancy $\leq 69\%$
- Single Family Homes



NORTH BEACH

PARKING DEMAND ANALYSIS

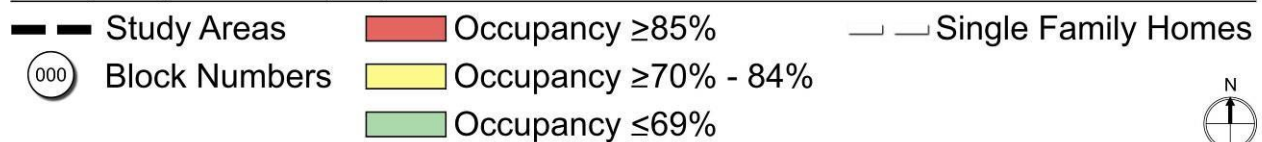


APPENDIX

PROJECT # 15-1988.00



Occupancy - Saturday 4 pm



NORTH BEACH

PARKING DEMAND ANALYSIS



APPENDIX

PROJECT # 15-1988.00



Occupancy - Saturday 9 pm

